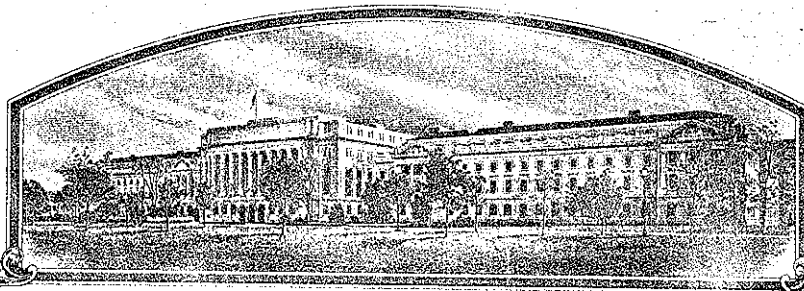


No.

7800087



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Ohio Agricultural Research and Development Center

Whereas, THERE HAS BEEN PRESENTED TO THE  
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *seventeen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Titan'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 29th day of September in the year of our Lord one thousand nine hundred and seventy-eight

Attest:

*Edward W. [Signature]*  
Commissioner  
Plant Variety Protection Office  
Grain Division  
Agricultural Marketing Service

*Bob [Signature]*  
Secretary of Agriculture

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

1a. TEMPORARY DESIGNATION OF VARIETY TN 1640	1b. VARIETY NAME Titan	FOR OFFICIAL USE ONLY	
2. KIND NAME Soft Red Winter Wheat	3. GENUS AND SPECIES NAME <u>Triticum aestivum</u> L.	PV. NUMBER 7800087	
4. FAMILY NAME (BOTANICAL) Graminae	5. DATE OF DETERMINATION July 26, 1977	FILING DATE 6-19-78	TIME 10:45 A.M.
6. NAME OF APPLICANT(S) Ohio Agricultural Research and Development Center	7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Wooster, Ohio 44691	FEE RECEIVED \$ 250.00 \$ 250.00 \$ 250.00	DATE 6-19-78 6-19-78 8-15-78
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.) Agricultural Experiment Station		8. TELEPHONE AREA CODE AND NUMBER 216-264-1021	
10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION		11. DATE OF INCORPORATION	

12. Name and mailing address of applicant representative(s), if any, to serve in this application and receive all papers:  
Dr. H. N. Lafever  
Agronomy Department  
Ohio Agricultural Research and Development Center  
Wooster, Ohio 44691

## 13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)  
☒ 13B. Exhibit B, Novelty Statement.  
☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)  
☒ 13D. Exhibit D, Additional Description of the Variety.

14A. Does the applicant(s) specify that seed of this variety be sold by variety name only as a class of certified seed?  
(See Section 83(a). (If "Yes," answer 14B and 14C below.) ☒ YES ☐ NO

14B. Does the applicant(s) specify that this variety be limited as to number of generations?  
☒ YES ☐ NO

14C. If "Yes," to 14B, how many generations of production beyond breeder seed?  
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

15. Does the applicant(s) agree to the publication of his/her (their) name(s) and address in the Official Journal?  
☒ YES ☐ NO

16. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be deposited upon request before issuance of a certificate and will be replenished periodically in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

5/26/78

(DATE)

Howard N. Lafever (Breeder)

(SIGNATURE OF APPLICANT)

6-7-78

(DATE)

Clarence W. Denhart

(SIGNATURE OF APPLICANT)

1

## INSTRUCTIONS

**GENERAL:** Send an original copy of the application, exhibits and \$250.00 fee to U.S. Dept. of Agriculture, Agricultural Marketing Service, Grain Division, National Agricultural Library, Beltsville, Maryland 20705. (See Section 180.175 of the regulations and rules of practice.) Retain one copy for your files. All items on the face of the form are self explanatory unless noted below.

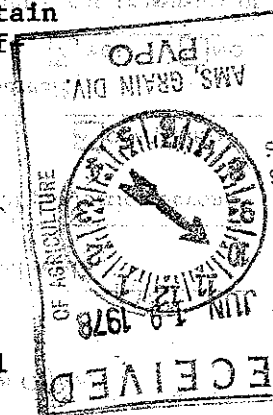
## ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in Section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 13a Give (1), the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method. (2), the details of subsequent stages of selection and multiplication. (3), the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4), evidence of stability.
- 13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties; (1) identify these varieties and state all differences objectively; (2) Attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

- 13c Fill in the Exhibit C, Objective Description form for all characteristics, for which you have adequate data.

- 13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe; such as; plant habit, plant color, disease resistance, etc.

14A If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled or published or the certificate has been issued. However, if the applicant specifies "NO", he may change his choice. (See Section 180.15 of the Regulations and Rules of Practice.)



Origin and Breeding History of the Variety

1. Titan (previously designated TN 1640) originated in Ohio from the cross of TN 1434 by 1057F<sub>4</sub>-33, two experimental Ohio-developed lines which were never released as varieties. TN 1434 originated from a cross of Lucas X Lucas-C.I. 12530 while 1057F<sub>4</sub>-33 originated from a cross of Norin 10-Brevor 2009 X Lucas. The cross was made in 1963 and was designated '563'.
2. Titan traces back to a single head selection made in 1966 in an F<sub>3</sub> bulk from the cross described above. The line was advanced to replicated yield trials in 1969 and to state-wide yield trials in 1973. Further purification of Titan was made by making numerous head selections in the F<sub>11</sub> generation in 1974. Progeny of 14 head selections was bulked to constitute Breeder Seed. Titan has been tested in the Uniform Eastern Soft Red Winter Wheat Nursery since 1974.
3. Titan appears to be homogeneous as observed in the field for the past 3 generations. This would be expected as the progeny of the single head selections have been observed in separate plots in 1975, 1976, and 1977 and only those lines which appeared identical in all three seasons were bulked to constitute Breeder seed.
4. Titan appears to be very stable and true breeding. Due to its high tillering potential it often appears somewhat irregular in thin or irregular stands and often exhibits some unevenness of head height especially during the early heading stages due to the later heading of secondary tillers.

Exhibit "A" Addendum

5. Variants observed during the development of this variety were few in number and of various phenotypes. In Breeder seed no variants were observed (other than the slight unevenness of height discussed in (4) above) except those which might be expected due to very slight admixtures, resulting from incomplete drill cleaning or combine cleaning at harvest. Variants resulting in future generations should be within allowable Certification maximums.
6. Criteria of selection during multiplication included precise standards of uniformity (i.e., no variants were allowed to remain in the variety). The variety was primarily selected for high yielding ability, moderate height, medium maturity, high straw strength, and acceptable milling and baking quality. The variety was selected in comparison with Logan and Ruler as a replacement for these varieties with a higher yield potential.

Exhibit BNovelty Statement and Botanical Description of the Variety

Titan is a moderately short, midseason variety of soft red winter wheat with a dark green foliage. The stem is stiff and erect. At maturity the head is only slightly nodding. At heading the flag leaf is semi-erect. Winterhardiness under Ohio conditions is excellent. Early fall and spring growth is mostly prostrate. Tillering ability is very good. Leaves appear slightly narrower than most other varieties, especially in the seedling stage.

Titan is moderately tolerant to acid-soil conditions, resistant to soil borne mosaic virus and tolerant or resistant to wheat spindle streak mosaic virus and has shown moderate field resistance to leaf rust and powdery mildew. It is also resistant to loose smut and to the Great Plains, A, C, and F races of Hessian fly.

Titan averages the same date of heading as Logan and Ruler, is about 6 days later than Arthur and has heads distinctively larger than other soft red winter wheat varieties. Heads are fusiform, mid-dense with yellow anthers and square glume shoulders. Heads are also apically awnleted with tip awns 1-2 cm in length.

Titan most closely resembles Logan and Ruler, however, it averages 5 cm shorter than Logan and 2.5 cm taller than Ruler. It is also more resistant to powdery mildew than Logan or Ruler. Titan also has distinctively larger heads than Logan or Ruler in side by side comparisons and narrower leaves in the seedling stage. Phenol reaction of Titan is black while Logan and Ruler are lt. brown and brown, respectively.

FORM GR-470-6  
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
GRAIN DIVISION  
HYATTSVILLE, MARYLAND 20782

FORM APPROVED. OMB NO. 40-R3712

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Ohio Agricultural Research and Development Center  
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

Wooster, Ohio 44691

FOR OFFICIAL USE ONLY

PVPO NUMBER

7800087

VARIETY NAME OR TEMPORARY  
DESIGNATION

Titan

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g.,  or ) when number is either 99 or less or 9 or less.

1. KIND:

1 = COMMON    2 = DURUM    3 = EMMER    4 = SPELT    5 = POLISH    6 = POULARD    7 = CLUB

2. TYPE:

1 = SPRING    2 = WINTER    3 = OTHER (Specify) \_\_\_\_\_  1 = SOFT    3 = OTHER (Specify) \_\_\_\_\_  
2 = HARD

1 = WHITE    2 = RED    3 = OTHER (Specify) \_\_\_\_\_

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING     LAST FLOWERING

4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS  
4 = LEMHI    5 = NUGAINES    6 = LEEDS  
 NO. OF DAYS LATER THAN .....

5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH  
 CM. TALLER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS  
4 = LEMHI    5 = NUGAINES    6 = LEEDS  
 CM. SHORTER THAN .....

6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN    2 = GREEN    3 = BLUE GREEN

7. ANTHUR COLOR:

1 = YELLOW    2 = PURPLE

8. STEM:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Waxy bloom: 1 = ABSENT    2 = PRESENT  
 Hairiness of last internode of rachis: 1 = ABSENT    2 = PRESENT     Internodes: 1 = HOLLOW    2 = SOLID  
 NO. OF NODES (Originating from node above ground)     CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Hairiness: 1 = ABSENT    2 = PRESENT

10. LEAF:

Flag leaf at booting stage: 1 = ERECT    2 = RECURVED    3 = OTHER (Specify) semi-erect     Flag leaf: 1 = NOT TWISTED    2 = TWISTED  
 Hairs of first leaf sheath: 1 = ABSENT    2 = PRESENT     Waxy bloom of flag leaf sheath: 1 = ABSENT    2 = PRESENT  
 MM. LEAF WIDTH (First leaf below flag leaf)     CM. LEAF LENGTH (First leaf below flag leaf):

7800087

## 11. HEAD:

2 Density: 1 = LAX 2 = DENSE

1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify)

2 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

2 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify)

1 1 CM. LENGTH 1 3 MM. WIDTH

## 12. GLUMES AT MATURITY:

3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.)

2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)

4 Shoulder 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE

2 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

1 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

1 Check: 1 = ROUNDED 2 = ANGULAR

1 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

1 Brush: 1 = NOT COLLARED 2 = COLLARED

5 Phenol reaction 1 = IVORY 2 = FAWN 3 = LT. BROWN  
(See instructions): 4 = BROWN 5 = BLACK

3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)

0 7 MM. LENGTH 0 3 MM. WIDTH 3 5 GM. PER 1000 SEEDS

## 17. SEED CREASE:

1 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

1 STEM RUST (Races) 17 1 LEAF RUST UN05-66A,  
(Races) UN02-64A,  
UN09-66A, UN01-68B

0 STRIPE RUST (Races) 2 LOOSE SMUT

1 POWDERY MILDEW 2 OTHER (Specify) spindle streak mosaic virus

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

0 SAWFLY 0 APHID (Bydv.) 0 GREEN BUG 1 CEREAL LEAF BEETLE

OTHER (Specify) HESSIAN FLY RACES: 2 GP 2 A 1 B 2 C  
1 D 1 E 2 F 1 G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Ruler	Seed size	Ruler
Leaf size	Ruler	Seed shape	Logan
Leaf color	Ruler	Coleoptile elongation	Logan
Leaf carriage	Ruler	Seedling pigmentation	Logan

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.



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Exhibit D

Additional Description of the Variety

Auricles of Titan occasionally show a trace of anthocyanin under certain growth conditions (Item 9, Exhibit C).

Head type is more accurately described as mid-dense (Item 11, Exhibit C).

While coleoptile color is normally white, it occasionally appears purple under certain growth conditions (Item 13, Exhibit C).

STEEL 61-43

3/8/77

Quality Evaluation of TN 1640  
Based on 3 Comparisons in Regional  
Drill Plot Trials and 2 Comparisons  
in Eastern Uniform Nursery Trials

A Report from the Soft Wheat Quality Lab.

Grain and Milling Quality

TN 1640 was found to be significantly lower in test weight than other cultivars with which it was compared (Tables 1 and 2). The consistency of the weight difference gives the appearance of a heritable trait. The test line protein content was slightly lower than Logan and significantly lower than the Indiana cultivars. Logan was finer than TN 1640 in granulation (higher PSI value, but the difference was not reflected in break flour yield in milling. However, TN 1640 showed a tendency to fracture more readily than the Indiana cultivars, a favorable attribute with regard to cake baking potential.

The test line milled well to give flour of reasonably low ash level, in good yield. It was generally better than the Arthur types in this regard. A single trial comparison of TN 1640 with Ruler showed the former to be a better miller than the latter. Some difficulty has been experienced by us in getting a good separation of endosperm and bran with Ruler. Millability of TN 1640 appears to be at least as good and in some respects superior to Arthur type cultivars. In Table 3 we show certain data for millings on 1976 entries. The weight of coarse shorts (which are reground) is being considered as a possible index of millability. Higher values indicate greater difficulty in milling.

Flour and Baking Quality

Data in Tables 1 and 2 indicate that the alkaline water retention capacity (AWRC) of TN 1640 is comparable to that of Logan and slightly higher than the Indiana lines. Although not presented in the tables, adjusted viscosity values for the test line were lower than for Arthur and related cultivars.

The cookie diameters for TN 1640 are smaller than for Arthur and related lines. Although not significantly so, we would prefer to attempt to forestall any erosion of quality by pointing out the small deficiency in this respect for TN 1640, as we have been doing in past years for other test lines that are a bit smaller than standards.

TN 1640 is significantly lower than Ruler in AWRC value. (In other tests, Ruler has been shown to have AWRC value which would be considered borderline.) In several respects, the line under consideration more nearly resembles Logan in overall flour and baking quality than it does Ruler. Logan has been satisfactory, thus, TN 1640 should also prove adequate from the quality standpoint.

8

*W. H. Thomas*

7800087

Table 1. Mean wheat and flour data for TN 1640 vs. other cultivars, Regional Drill Plot Nursery, 1973-1975.

	TN 1640	Logan	Arthur	Abe
Test wt. (lb.)	59.8	60.2	60.6	60.3
Wheat Protein (%)	10.3	10.5	11.0	10.8
Particle Size Index (%)	22.3	25.5	21.5	23.5
Break Flour Yield (%)	37.6	38.7	32.3	33.4
Flour Yield (%)	72.7	73.2	74.9	73.0
Flour Ash (%)	.39	.39	.43	.44
Flour Protein (%)	8.7	8.8	9.5	9.4
AWRC (%)	52.6	52.0	50.7	51.3
Cookie Diameter (cm.)	17.3	17.4	17.3	17.4

7800087

Table 2. Mean wheat and flour data for TN 1640 vs. other cultivars,  
Uniform Nursery, 1974-1975

	TN 1640	Abe	Arthur 71	Oasis	Knox 62
Test wt. (lb.)	58.6	60.3	60.6	60.4	60.9
Wheat Protein (%)	10.8	11.4	11.5	11.6	11.4
Particle Size Index (%)	21.0	23.1	24.6	23.8	22.6
Break Flour Yield	37.5	31.0	31.5	31.8	34.1
Flour Yield (%)	73.8	73.3	72.6	73.2	74.2
Flour Ash (%)	.40	.43	.38	.42	.37
Flour Protein	9.3	10.0	9.9	10.0	9.8
AWRC (%)	51.9	50.8	51.7	51.9	50.7
Cookie Diam. (cm.)	17.2	17.4	17.5	17.5	17.4

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Table 3. Yield, flour ash, and weight of coarse shorts for regrind, data for 1976 entries.

	Yield	Ash	Coarse Shorts
	%	%	g.
<u>Regional Drill Plots</u>			
TN 1640	74.5	.36	341
Ruler	74.6	.39	376
Logan	74.4	.35	284
Arthur	76.8	.40	289
<u>Uniform Nursery</u>			
TN 1640	75.3	.38	416
Ruler	75.0	.41	480
Abe	74.4	.43	425
Arthur 6	75.2	.43	454

Ohio Agricultural Research and Development Center  
Wooster, Ohio

Release of TITAN (C.I. 17762) Soft Red Winter Wheat

The Ohio Agricultural Research and Development Center announces the release of a new soft red winter wheat variety named TITAN.

Titan was designated TN 1640 during development and testing.

Titan originated from the cross of TN 1434 X 1057F<sub>4</sub>-33, two experimental Ohio-developed lines which were never released as varieties. TN 1434 originated from a cross of Lucas X Lucas-CI 12530 while 1057F<sub>4</sub>-33 originated from a cross of Norin 10-Brevor 2009 X Lucas. Titan traces back to a single head selection made in 1966 in an F<sub>3</sub> bulk from this cross. Further purification of Titan was made by bulking the progeny of 14 head selections made in the F<sub>11</sub> generation in 1974.

Seed classes of Titan designated by the Ohio Agricultural Research and Development Center are Breeder, Foundation, Registered and Certified. The Ohio Agricultural Research and Development Center will maintain Breeder seed. A Plant Variety Protection Certificate will be applied for with the provision that seed of Titan be made available only as a class of Certified seed and must be labeled as a protected variety. No royalty will be charged on seed of the variety. Breeder seed of Titan was used to seed approximately 60 acres in Ohio 1977 by Ohio Foundation Seeds, Inc., thus, Foundation generation seed distribution will be made following 1978 harvest.

Titan has been tested in state-wide Ohio yield trials since 1973 and in the Uniform Eastern Soft Red Winter Wheat Nursery since 1974 and has been outstanding in yield in Ohio tests and in neighboring states. Titan has averaged 7% higher yields than Ruler, 11% higher yields than Logan and 19-23% higher yields than the Arthur-type varieties (Abe, Arthur, Arthur 71, and Oasis) in 40 trials conducted in Ohio since 1972. Yields and other agronomic data are given in Tables 1 and 2.

Test weight of Titan is classed as medium; being one to one and a half pounds lighter than the other major varieties currently in production in Ohio.

Titan has averaged the same heading date as Logan and Ruler in our trials and is about 6 days later than the Arthur-type varieties. In years or locations where Logan, Ruler, and Titan have not headed at the same time Ruler is usually earliest, followed by Titan and then Logan.

Plant height of Titan is normally between that of Ruler and Logan averaging 3-4 inches taller than most Arthur-type varieties; however, straw strength has been as good as or better than that of all other major varieties in Ohio. Winter survival of Titan has been excellent, equalling Logan and Ruler and exceeding the Arthur-type varieties under severe winter conditions.

Titan is moderately tolerant to acid-soil conditions, being about equal to Logan and Ruler in this respect, and distinctly superior to the Arthur-type varieties.

Titan is beardless, has dark green foliage, maintains a prostrate growth habit later in the spring than most varieties, has large heads, and at maturity has white chaff and yellow straw color. Titan has a high tillering capacity.

Titan is resistant to race A of Hessian fly, one of the two most prevalent races in Ohio, appears resistant to loose smut under both natural and artificial infection, has shown moderate field resistance to powdery mildew and leaf rust, appears tolerant to wheat spindle streak mosaic virus and resistant to soil borne mosaic virus. No data on barley yellow dwarf virus reaction are available.

Protein content of Titan has been somewhat lower than Arthur and Abe and slightly lower than Logan; a trait which may make it very desirable by millers and bakers since high protein in soft wheat has become a problem in recent years. Milling and baking characteristics are satisfactory; being about equal to Logan and in some respects superior to the Arthur-type varieties.

Release of information to the general public regarding the name, release, and description of Titan may be made at any time.

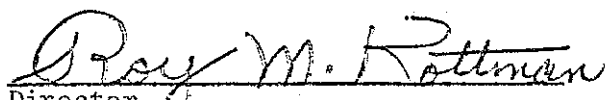
  
Director,  
Ohio Agricultural Research and  
Development Center

Table 1. Comparative performance of Abe, Arthur, \*Arthur 71, Logan, Oasis, Ruler and Titan in Ohio drilled-plot trials.

Variety	Yield	Test Weight	Heading Date	Plant Height	Lodging	Winter Survival
	bu/A	lb/bu	May	Inches	%	%
Abe	49.6	59.0	22	32	6	94
Arthur	48.7	59.2	22	33	6	96
Arthur 71	47.9	59.4	22	34	8	96
Logan	53.2	59.1	28	39	6	97
Oasis**	49.3	59.6	23	34	4	96
Ruler	55.1	59.2	28	36	8	97
Titan	59.0	57.9	28	37	5	97

\*Yield and test weight values are averages of 40 location-years, 1972-77.

Heading date and lodging values are averages of 33 location-years, 1972-77.

Plant height values are averages of 38 location-years, 1972-77.

Winter survival values are averages of 28 location-years, 1972-77.

\*\*Values adjusted on basis of relative performance in 1974-77 only.





United States Department of Agriculture

January 21, 1998

Research, Education, and Economics  
Agricultural Research Service

Marian R. Minnifield  
Secretary  
Plant Variety Protection Office  
NAL Building, Room 500  
10301 Baltimore Boulevard  
Beltsville, Maryland 20705-2351

Subj: Expired PVPO's; disposition of

1. The following expired PVPO's have been transferred to the NPGS. Our records have been changed accordingly.

<u>Serial Number</u>		<u>PVP Number</u>	<u>EXPIRED</u>
107423	01	7900099	01/02/1997
107424	01	7800077	01/02/1997
107425	01	7900062	01/02/1997
107428	01	7900095	01/02/1997
107429	01	7700092	01/02/1997
108309	01	7900116	01/29/1997
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112357	01	8000102	07/31/1997
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114600	01	8000011	10/16/1997
114601	01	8000134	10/16/1997
169608	01	8100103	07/15/1997

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